REMARKS

In the Office Action the Examiner noted that claims 1, 6 and 22-37 are pending in the application. The Examiner allowed claims 1, 6, 22-33 and 35-37. The Examiner rejected claim 34. By this amendment, claims 30 and 34 have been amended. Thus, claims, 1, 6 and 22-37 remain pending in the application. The Examiner's rejections are traversed below.

The April 26, 2004 Interview

Appreciation is expressed to the Examiner for the interview granted on April 26, 2004. As reflected by the Interview Summary, possible amendments to claims 30 and 34 were discussed. The substance of the interview is set forth below in conjunction with the discussions of claim 30 and 34.

The Prior Art Rejection

In item 4 on pages 3-5 of the Office Action the Examiner issued a new rejection of claim 34 under 35 U.S.C. § 103 as unpatentable over U.S. Patent 5,115,216 to Hikita et al. taken in conjunction with JP 59-158117 to Hikita.

The Examiner cites Hikita JP '117 for its basic filter structure. However, the Examiner acknowledges that Hikita JP '117 does not show at least one of the SAW filters comprising resonators connected in a multiple ladder structure on a single pizoelectric substrate.

Figure 1 of U.S. Patent 5,115,216 to Hikita et al. discloses four 1-port SAW resonators formed of metal electrodes, 4-1, 4-2, 4-3, 4-4, 4-5, 4-6 and a single gap capacitor formed by electrode patterns 5-1 and 5-2, all of which are provided on a piezoelectric substrate 7. The Examiner takes the position that it would have been obvious to substitute the structure of Figure 1 of Hikita et al. '216 for the SAW filters 2 and 3 in Figures 1 and 3 of Hikita JP '117. The Examiner's line of reasoning is as follows:

> ...because such an obvious modification would have been the mere substitution of art recognized alternate SAW filters and because the SAW ladder filters would have provided benefits of less losses in the acoustic/electric conversion, better power handling, and better frequency characteristics than the transversal

> type features in the JP reference as explicitly suggested by Hikita et al. U.S. '216 (see col. 1, lines 18-63).

See page 4 of the Office Action.

At the bottom of page 4 of the Office Action the Examiner sets forth an alternative analysis stating that it would have been obvious to have modified the SAW filter illustrated in Figures 1 and 4 of Hikita et al. '216 to use two of them in a duplexer/dual SAW band-pass filter "because Hikita et al. U.S. '216 explicitly suggests using its filters in mobile phones (see col. 1, lines 8-16) which one of ordinary skill in the art would have known included duplexer/dual SAW band-pass filters suggested by the exemplary teaching of Hikita JP '117 (Figs. 1 and 3)." (Page 4 of Office Action.)

Claim 34 Patentably Distinguishes Over the Prior Art

To clarify the differences between claim 34 and the prior art, claim 34 has been amended to recite:

> "a pair of SAW filters, each having respective pass bands, a pair of input terminals, a pair of output terminals and at least one of the pair of SAW filters comprising only a plurality of SAW resonators connected in a multiple ladder structure formed by series arms and parallel arms on a single piezoelectric substrate;"

It is submitted that none of the prior art teaches or suggest a band-pass filter having the above-identified features. Therefore, it is submitted that claim 34 patentably distinguishes over the prior art.

Initially, it is noted that the inventors of Hikita et al. '216 have other documents disclosing similar circuits. For example, see U.S. Patent 4,734,664 and JP 63-132515 listed as cited art in parent patent RE 37,375 (of record in the subject application).

Referring to Figure 4 of Hikita et al. '216, it is noted that this figure discloses a gap capacitor 14. The effect of this capacitor is described in JP 63-132515 which corresponds to U.S. Patent 4,803,449 (of record in the subject application)

Referring to Figures 9 and 10 of the Hikita '449 patent, Figure 10 is an equivalent circuit corresponding to Figure 9. Figure 10 shows a capacitance 101 dividing the left side ladder circuit and the right side ladder circuit. The capacitance 101 corresponds to the gap capacitor

14 in Figure 4 of Hikita '216.

Claim 34, as amended, recites "a pair of SAW filters, each having respective pass bands, a pair of input terminals, a pair or output terminals and at least one of the pair of SAW filters comprising only a plurality of SAW resonators connected in a multiple ladder structure formed by series arms and parallel arms on a single piezoelectric substrate."

In contrast to claim 34, there is nothing in the prior art which teaches or suggests a circuit formed only by a plurality of SAW resonators as set forth in claim 34. Referring to Hikita '449, claim 1 of that patent claims a plurality of circuit elements each having a capacitance element. Claim 2 recites a series circuit which is formed by only a plurality of capacitance. Claim 3 recites a series circuit which is formed by a capacitance element and a SAW resonator. As discussed at the interview, it is submitted that it is clear that the description in Hikita '449 does not reveal the series and parallel arms which are formed by only SAW resonators as set forth in claim 34 (see column 7, lines 45-51 of Hikita '449).

Since the description in Hikita '449 explains that the capacitance is a critical element, it is submitted that one of ordinary skill would not have been lead to modify the teachings of Hikita '216 and Hikita JP '117 to achieve the present claimed invention. Therefore, it is submitted that claim 34 patentably distinguishes over the prior art.

At the interview, the Examiner indicated that the inclusion of the word "only" would probably overcome the current rejection. However, the Examiner indicated that she believed that there was other prior art showing a ladder circuit which did not include a gap capacitor. For example, the Examiner indicated that she might combine the teachings of U.S. Patent 4,166,258 to Tseng with the teachings of the Hikita '117 reference. However, applicants submit that it is not appropriate to combine the Tseng and Hikita references. Tseng discloses a T-type ladder connection having two serial arms and one parallel arm. This is not a multiple ladder structure as set forth in claim 34.

In summary, it is submitted that claim 34 patentably distingushies over the prior art.

Amended Claim 30

As discussed at the interview, claim 30 has been amended to broaden the following terms:

1. "a first SAW filter" has been amended to recited "a first band-pass filter";

2. "a plurality of one-port SAW resonators" has been amended to recite "a plurality of one-port acoustic wave resonators";

3. "a second SAW filter" has been amended to recite "a second band-pass filter";

4. "a line used for phase rotation" has been amended to recite "a circuit element used for phase rotation."

As discussed at the interview, while claim 30 is being broadened, it is submitted that this broadened claim is fully supported by the disclosure in the subject application. Further, it is submitted that amended claim 30 still distinguishes over the prior art. In particular, claim 30 recites the features of a band-pass filter which includes a circuit element used for phase rotation and connected in series between one of the pair of common signal terminals and the second band pass filter. Therefore, it is submitted that amended claim 30 patentably distinguishes over the prior art.

Summary

It is submitted that none of the references, either taken alone or in combination, teach the present claimed invention. Thus, claims 1, 6 and 22-37 patentably distinguish over the prior art. Reconsideration of the claims and an early notice of allowance are earnestly solicited.

Respectfully submitted,

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Date: 5-7-04

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